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in the following listed application(s) or patent(s) for which the issue fee has been paid.

| <u>Patent No.</u> | <u>Serial No.</u> | <u>Patent Date</u> | <u>US Filing Date</u> | <u>Confirmation No.</u> | <u>Attorney Docket No.</u> |
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(12) **United States Patent**
Satake et al.

(10) **Patent No.:** **US 7,362,398 B2**
(45) **Date of Patent:** ***Apr. 22, 2008**

(54) **CAMERA AND PERSONAL COMPUTER HAVING A REFLECTION TYPE LIQUID CRYSTAL DEVICE WITH PARTICULAR DIELECTRIC MULTI-LAYER FILM AND INTERLAYER INSULATING FILMS**

(75) **Inventors:** **Rumo Satake, Kanagawa (JP); Yoshiharu Hirakata, Kanagawa (JP); Takeshi Nishi, Kanagawa (JP); Shunpei Yamazaki, Tokyo (JP)**

(73) **Assignee:** **Semiconductor Energy Laboratory Co., Ltd. (JP)**

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) **Appl. No.:** **10/800,483**

(22) **Filed:** **Mar. 15, 2004**

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Related U.S. Application Data

(63) Continuation of application No. 10/200,558, filed on Jul. 22, 2002, now Pat. No. 6,707,521, which is a continuation of application No. 09/332,792, filed on Jun. 14, 1999, now Pat. No. 6,426,787.

(30) **Foreign Application Priority Data**

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(51) **Int. Cl.**

G02F 1/1333 (2006.01)

G02F 1/1335 (2006.01)

(52) **U.S. Cl.** 349/138; 349/112; 349/113

(58) **Field of Classification Search** 349/138, 349/113, 114, 112, 147
See application file for complete search history.

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(57)

ABSTRACT

To provide a novel and extremely effective structure of a liquid crystal display device in which the lowering of reflectivity due to the formation of orientation films can be prevented, a method of manufacturing the display device of the present invention comprises forming a concave or convex portion on a reflection electrode, forming a dielectric multi-layer film thereon, to thereby obtain the liquid crystal display device excellent in reflection characteristics and diffused reflection characteristics.

30 Claims, 11 Drawing Sheets

